

(self-reported) are oriented to diploma attainment. For example, census categories are “9th to 12th grade, no diploma” and “high school graduate.” We have assumed that most people completing 12 years of education will have graduated from high school and therefore that the categories 9-11 and 12 on the death certificate are generally compatible with the census categories. For college, however, more people are likely to complete 16 years of education (4 past high school) and not get a diploma. The available census categories are “some college, no degree” and “bachelor’s degree.” Therefore, to reduce error, all educational levels above high school have been combined into one category.

The racial groups examined in this study are white and black; American Indian and Asian deaths were omitted due to small numbers of deaths. To analyze differences that may occur across race-sex groups, the data are generally broken out into four major demographic categories: white male, white female, black male, and black female. The census population counts for 1990 were multiplied by three to form the denominators of the 1989-91 death rates. Deaths and census data only for persons age 25 and over were used to calculate the rates, since education is usually fixed by that age.

One problem with the educational information on the death certificate is that there is a large amount of missing data. During 1989-91, 16 percent of the death records for whites had missing education while for blacks the percentage missing was 15. We have left deaths with missing education out of the death rates presented in the Results section. If the distribution of these deaths with missing education is essentially random, then the size of the death rates will be reduced somewhat but the comparisons by race-sex and education will not be biased. The age-race-sex distribution of these deaths with missing education is very similar to the age-race-sex distribution of deaths with known education during 1989-91, though slightly shifted toward the 75+ age group.

A critical factor incorporated into this study is age adjustment of the death rates. Rates for race-

sex-education groups were adjusted to the age distribution of the total population (white plus black) using the direct method of age adjustment. Age-specific rates for the adjustment process were computed for the seven age groups of the available census data: 25-34, 35-44, 45-54, 55-59, 60-64, 65-74, and 75+. The 1989-91 age-specific numbers of deaths used in the adjustment process were, with a very few exceptions, much larger than 100. Therefore, the rates computed with these numerators will be relatively stable from a statistical standpoint. The age distribution differs drastically by educational category; persons with low education are much older on average than persons with higher education. To ignore age adjustment would be to attribute to education what is predominantly an age effect. Also, blacks in North Carolina have a younger age distribution than whites, which tends to lower their unadjusted death rate. The importance of age adjustment will be illustrated clearly in the data presented in the Results section.

Only overall death rates are examined in this study. We are not testing any hypotheses about how the results might vary by cause of death. Serious problems of statistical instability could result from computing death rates for cause-specific categories, which may have a very small number of deaths.

RESULTS

Table 1 presents data on the 1990 resident population of North Carolina age 25 and over. These census data (multiplied by three) are used as the denominators of the 1989-91 mortality rates in this study. Table 1 shows that blacks have generally lower educational levels than whites; for example, the percentages of the population with less than a high school education are 43 and 41 for black males and black females, compared to 27 for both white males and white females. A striking finding in Table 1 is the much higher average age of persons in the lower educational groups. This underscores the importance of adjusting mortality rates for age when making comparisons among educational groups. Also, except for the lowest educational group, blacks are